All the edges of a square pyramid are 18cm. What is its volume?

Using *Pythagoras' theorem* we get:

$$a^2 + a^2 = (AC)^2 \Rightarrow AC = a\sqrt{2} \Rightarrow AM = \frac{a\sqrt{2}}{2}$$

and

$$AM^2 + h^2 = a^2$$

$$\left(\frac{a\sqrt{2}}{2}\right)^2 + h^2 = a^2$$

$$h^2 = a^2 - \frac{a^2}{2} \Rightarrow h = \frac{a}{\sqrt{2}}$$

Therefore: $V = \frac{a^2 \cdot \frac{a}{\sqrt{2}}}{3} = \frac{a^3}{3\sqrt{2}} = a^3 \cdot \frac{\sqrt{2}}{6}$

Plugging in $a = 18\,cm$:

$$V = 18^3 \cdot \frac{\sqrt{2}}{6} = 972 \cdot \sqrt{2} \approx 1374.62\,cm^3$$